Chapter Two
AVIATION DEMAND FORECASTS

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AVIATION DEMAND FORECASTS

The proper planning of a facility of any type must begin with a definition of the needs that the facility can reasonably be expected to serve over the specified planning period. At Cottonwood Municipal Airport, this involves the development of a set of forecasts that define the potential of future aviation demand. Forecasts of general aviation activity at the airport can be used as a basis for determining the types and sizes of aviation facilities required to meet the aviation needs of the Cottonwood Service Area through the year 2015.

The primary objective of a forecasting effort is to define the magnitude of change that can be expected over time. Because of the cyclical nature of the economy, it is virtually impossible to predict with certainty aviation activity on a year-to-year basis over an extended period of time. However, a growth curve can be established to predict the overall long-term growth potential.

While a single line is often used to express the anticipated growth, it is important to remember that actual growth may fluctuate above and below this line, actual growth in activity seldom follows a simple straight line or mathematical curve. The primary point to remember about forecasts is that they serve only as guidelines, and planning must remain flexible to respond to unforeseen events.

Aviation activity at an airport is influenced by many external factors, as well as by the facilities and services available. Few industries have seen as dramatic a change as the aviation industry since the first powered flight. Major technological advancements, as well as regulatory and economic actions, have resulted in erratic growth patterns which have had significant impacts on aviation activity.

More recently, regulatory actions and economic factors have resulted in very

significant impacts on activity patterns at most airports. The following sections attempt to define the historical trends and discuss how other influences could affect future trends in establishing forecasts of aviation activity for Cottonwood Municipal Airport.

FORECASTING PROCEDURES

The systematic development of aviation forecasts involves both analytical and judgmental processes. A series of mathematical relationships are tested to establish statistical and logical rationale for projected growth. However, the judgment of the forecast analyst, based upon professional experience and detailed knowledge of the situation, is important in the final subjective determination of the preferred forecast.

The analysis begins with the assessment of historical trends as data is collected and sorted on a variety of aviation indicators at the local, regional, and national level. Data on aviation related factors such as aircraft operations, based and registered aircraft, and fuel sales were obtained for the analyses. Similarly, socioeconomic factors such as population, income, and employment are also analyzed for the effect they have had on aviation activity. The identification and comparison of the relationships between these various indicators provides the initial step in the development of realistic forecasts of aviation demand.

As part of the analytical process, trend lines based upon historic relationships are extended into the future based upon these techniques and assumptions. Trend lines developed through the use of a variety of techniques are called projections. After preparing several such projections, the analyst is able to identify a range of growth within which the actual trend will probably fall.

FORECAST METHODOLOGY

The most reliable approach to estimating future aviation demand is the use of several analytical models, and a comparison of the results. The most common techniques used include the following: correlation analysis, regression analysis, time-series extrapolation, and market-share analysis.

Correlation analysis examines the direct relationship between two or more sets of historical data. Used primarily as a statistical test on a multiplicity of variables, this analysis will detect significant correlations between sets of data. These sets can then be evaluated further using regression analysis.

In **regression analysis**, projections of an aviation demand element (the dependent variable) are prepared based upon its relationship to one or more aviation indicators, known as the independent variables. Aircraft operations and based aircraft are examples of dependent variables, while population, per capita income, gross national product, and other socioeconomic factors are examples of independent variables. Linear, curvilinear, and multiple regression analyses all can be tested to attempt to define a relationship from which future activity can be projected.

Time-series, least squares extrapolation is probably the simplest, most widely used method of forecasting. This technique involves the fit of classical growth curves to future years. In utilizing this technique, an assumption is made that the same factors

that have affected aviation demand in the past will continue to affect aviation demand in the future. While this can be a rather broad assumption, it provides a reliable benchmark for comparing the results of other analyses.

The **market-share** technique involves a review of the activity at Cottonwood Municipal Airport in terms of a larger aviation market. The local share-of-the-market factor is multiplied by forecasts of the larger market for a projection. This *top-down* approach proves useful as a check on the validity of projections based on other techniques.

Using a broad spectrum of local, regional, and national socioeconomic information, surveys and aviation trends, forecasts are developed in the following sections for several key aviation activity categories:

- Based Aircraft
- Aircraft Mix
- Aircraft Operations
- Peaking Characteristics

At this point, the judgmental phase begins. The analyst must study the various growth elements and utilizing experienced professional judgment, weigh several other intangible factors before finalizing a preferred forecast. These factors include the following.

- Uses for which the forecast is being developed.
- Character of the community.
- Potential changes in the general business environs.
- State-of-the-art advances in technology.
- Impact of new facilities or improved services.
- Policies of the airport owner and operator.

For planning purposes, two important considerations impact the finalized forecasts. First, one cannot assume a high level of confidence in forecasts that extend beyond five years. However, more than five years is often needed to complete a facilities development program, and at least twenty years is necessary to adequately amortize most capital improvements. The second consideration is the level of optimism reflected in the forecasts. The planning effort must design in a degree of flexibility that will be responsive to deviations from the preferred forecasts.

TRENDS AT THE NATIONAL LEVEL

Each year, the FAA publishes a national forecast of aviation activity. Included in these projections are categories for air carriers, air taxi/commuters, general aviation, and military activity. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA, and to provide information that can be used by state and local authorities, the aviation industry, and by the general public.

The current edition of the **FAA Aviation Forecasts, Fiscal Years 1991-2002,** was used to prepare the basis for the series of forecasts presented for Cottonwood Municipal Airport. A synopsis of existing and future conditions in the aviation industry is presented in the paragraphs that follow.

The total active general aviation fleet increased from 210,266 active general aviation aircraft in 1989 to 219,737 in 1990. Single engine piston aircraft increased from 164,760 to 170,370 during the 1989-90 period, nearly recovering to the total number of active single engine aircraft existing in 1987 (171,035). The

multi-engine aircraft grew from 22,797 in 1989 to 23,445 in 1990 and the turboprop aircraft from 5,259 to 6,324 during the same period. The turbojet and rotary aircraft also experienced an increase in numbers, growing from 4,187 and 6,406, respectively to 4,402 and 7,475.

As illustrated in **Exhibit 2A**, total aircraft shipments declined during this period after having reversed a downward trend during the 1987-1989 period. Single engine piston aircraft declined by 25.5 percent in 1990 while multi-engine aircraft shipments remained the same. Continuing a trend that has been consistent since deregulation (although the numbers have declined), turbojet and rotary aircraft shipments increased 4.9 and 7.0 percent, respectively in 1990. Although net export billings increased in 1990, the total number of aircraft shipped overseas declined 21.9 percent from 1989. As always, the export of general aviation aircraft is affected by the price of the aircraft, the exchange rate of the U.S. dollar and the national economic condition.

The FAA has recently found that general aviation forecasts do not follow the "normal" trends, i.e., traditional economic variables. On the whole, general aviation did not respond to the economic recovery between 1982-1989, one of the most robust since the postwar period.

Several factors have played a major role in this disparity, such as higher aircraft prices, operating costs, interest rates and product liability costs. Airline deregulation has also affected general aviation. Increased service and better connections have reduced the demand for private flights to destinations not served by commercial airlines.

However, the recent rise in airline fares and increased congestion at airports could make the general aviation alternative more attractive in the future. There are those who believe the overvalued dollar severely depressed the export market. Some combination of these factors is surely responsible, and their negative impact has outweighed the positive effects of a growing economy.

Summarizing the assumptions under which the forecasts were developed, the active general aviation fleet is expected to grow a modest 0.4 percent annually over the FAA's 12-year forecasting period. The single-engine piston fleet is expected to remain almost constant over the period, growing from 170,370 in 1990 to 170,500 in 2002. The fleet is expected to grow faster between 1990 to 1996, averaging about 1.2 percent annual growth before declining between 1997 to 2002 at an average annual decline of 0.2 percent.

A slight increase in the number of multi-engine aircraft is also predicted, from 23,445 in 1990 to 24,000 in 2002. Reflecting the increasing sophistication of general aviation aircraft, turbine powered aircraft are anticipated to increase from 10,726 in 1990 to 15,000 in 2002, an average annual growth rate of 3.3 percent. The turbine rotary aircraft are expected to grow at an average rate of 6.1 percent annually.

The pilot population is also anticipated to increase with most of the growth coming in the number of airline pilots needed to meet the growing demand (3.1 percent annually) while private pilot growth will nearly match that of the single engine piston aircraft growth (0.3 percent annually to 2002).

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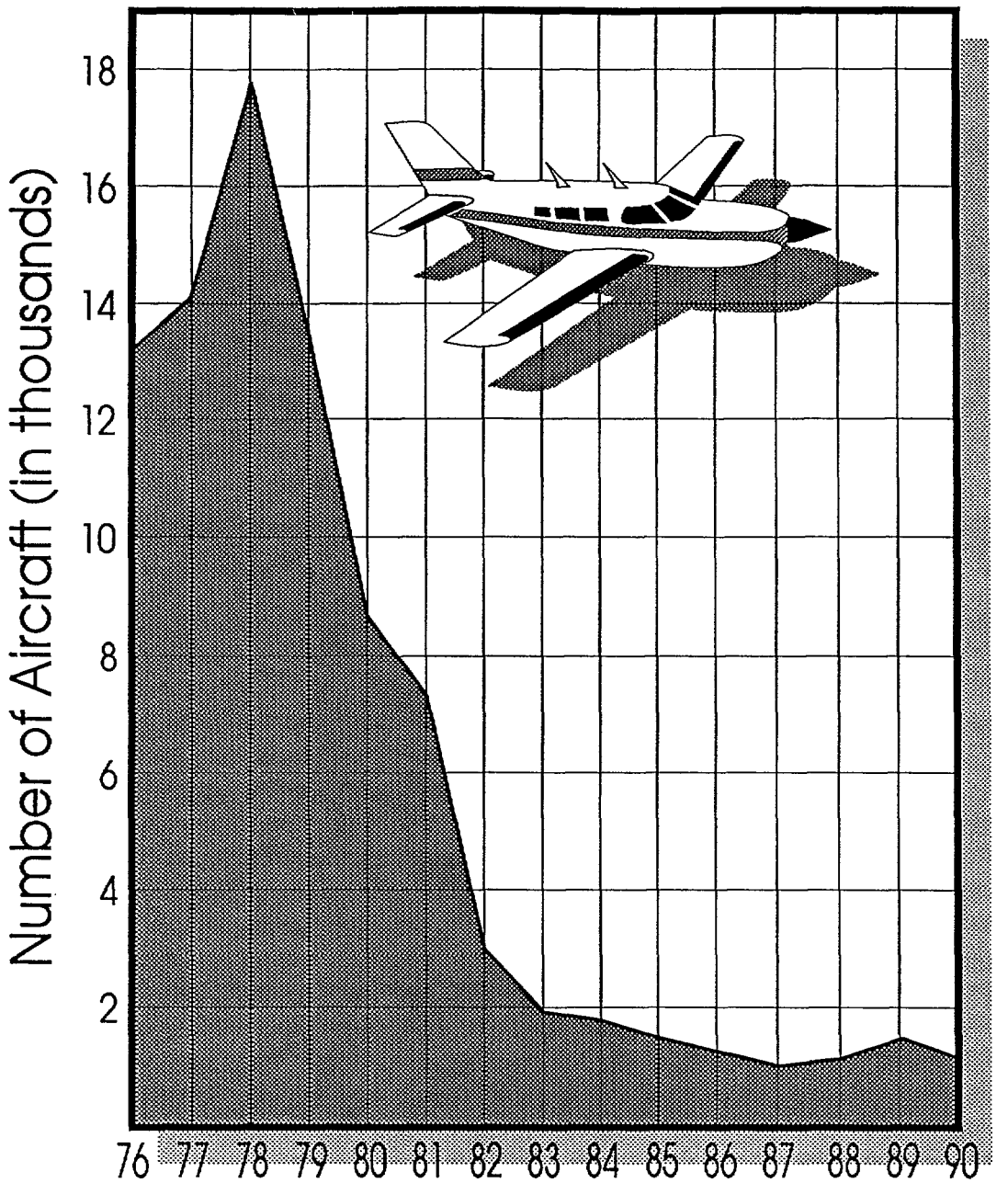

Cottonwood
ARIZONA

Exhibit 2A
GENERAL AVIATION AIRCRAFT SHIPMENTS (1976-1990)

AIRLINE ACTIVITY FORECAST

At the present time, Cottonwood Municipal Airport is not being served by a scheduled airline. To determine the type and size of facilities which may be needed to accommodate future airline activity at the airport, several elements of this type of activity must be forecast. The two elements considered most important include annual enplaned passengers and annual commercial aircraft operations.

ANNUAL ENPLANED PASSENGERS

Enplaning passengers are those who board a commercial service aircraft for departure from the airport. To develop enplanement forecasts, several of the analytical techniques outlined previously were examined for their applicability. These include historical trend analysis, regression analysis, and market share analysis.

Since there has not been a scheduled airline serving the Cottonwood Municipal Airport, trendline analysis for the airport could not be preformed. In addition, regression analysis was used to compare the area's socioeconomic factors to the number of annual enplanements for the State of Arizona and Yavapai County, but the correlation values were poor.

A comparison of other nearby commercial service airports (Prescott, Sedona, and Kingman), with comparable socioeconomic factors, showed that the average number of enplanements per 1,000 people in each service area was approximately 250. Due to Cottonwood Municipal Airport's convenient access to the state highway infrastructure and its central location within the state, it is expected that the average number of enplanements per 1,000 people would be approximately 150. This factor is expected to grow to 170 over the planning period. The enplanement factor was then applied to the population forecast for the Cottonwood Municipal Airport Service Area. The resulting forecast enplanements for the Cottonwood Municipal Airport are shown in **Table 2A.**

COMMERCIAL OPERATIONS

In addition to passenger enplanements, there are other factors which affect forecasts of airline activity. The number of projected airline operations can be determined by applying an average ratio of passenger enplanements per departure. This ratio is dependent upon the size of the aircraft and the average percentage of seats that are filled for each departure. This percentage of enplanements to available seats is called the boarding load factor (BLF).

The BLF is important to airline companies because it serves as a measure of airline profit from a given market. When the BLF is high, an airline will often consider increasing the number of seats or the number of flights available. This factor affects each airline to varying degrees, depending upon the aircraft equipment available and the market strategy of the airline.

The forecast of airline operations for Cottonwood Municipal Airport was based on aircraft with available passenger capacity of three to five seats, and an average BLF of 70.0 percent. **Table 2A** summarizes the commercial operation forecast.

TABLE 2A
Forecast Enplanement and Operation Levels
Cottonwood Municipal Airport

	1995	2000	2005	2010	2015
Service Area Population	28,065	31,685	35,335	39,320	43,775
Annual Enplanements	4,200	4,900	5,700	6,500	7,500
Annual Departures	1,400	1,650	1,900	2,200	2,500
Annual Commuter Operations	2,800	3,300	3,800	4,400	5,000

GENERAL AVIATION DEMAND

General aviation is defined as that portion of civil aviation which encompasses all facets of aviation except commercial and military operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. These indicators of general aviation demand include:

- Based Aircraft
- Based Aircraft Fleet Mix
- Aircraft Operations

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft, the growth of the other indicators can be projected based upon this growth and other factors characteristic to Cottonwood Municipal Airport and the area it serves. The rationale behind general aviation activity forecasts is presented below.

BASED AIRCRAFT

Based aircraft at Cottonwood Municipal Airport totaled 29 in 1991. According to historical **FAA Form 5010 Master Records**, based aircraft at Cottonwood Municipal Airport have fluctuated from a low of 17 aircraft in 1973 to a high of 44 in 1990.

The number of aircraft based at an airport is somewhat dependent upon the nature and magnitude of aircraft ownership in the local service area. Therefore, the process of developing forecasts for based aircraft was initiated with a review of historical aircraft registrations in the State of Arizona, Yavapai County, and at Cottonwood Municipal Airport. **Table 2B** presents the State of Arizona and Yavapai County aircraft registrations since 1972 and compares them with active aircraft in the Western-Pacific Region of the FAA.

Aircraft registrations more than tripled in Yavapai County since 1972, growing from 116 in 1972 to 388 in 1991. This indicator

of local general aviation demand has indicated a 12.3 percent average annual growth during the nineteen year period.

Statistical regression tests do not show any reasonable correlations with local socioeconomic indicators, therefore share-of-the-market analysis was used for the planning forecast. Yavapai County's share of the region's active general aviation aircraft has increased nearly 0.4 percent during this period. It is expected that Yavapai County based aircraft will continue to grow at an annual rate of just under 0.01 percent. This is anticipated due to the projected growth in population of the region through the planning period. Table 2B presents a forecast of registered aircraft in Yavapai County based upon a continually increasing share-of-the-market.

Based aircraft at Cottonwood Municipal Airport as a percentage of Yavapai County registered aircraft has remained relatively stable averaging 9.6 percent. This percentage has fluctuated from a low of 7.5 percent in 1991 to a high of 21.6 percent in 1972. Table 2C illustrates the resulting projections of based aircraft obtained using various types of statistical analyses and the projections from the Cottonwood Municipal Airport Master Plan (1986), the State Aviation Needs Study (SANS), 1990, and the State Aviation System Plan (SASP), 1988.

TABLE 2B
Historical and Projected Based Aircraft
Cottonwood Municipal Airport

Year	Western Pacific Region Active A/C	State Of Arizona Registered Aircraft	Yavapai County Registered Aircraft	Yavapai County Percent Of Region	Cottonwood Based Aircraft	Cottonwood Percent Of County
1972	N/A	2,945	116	N/A	25	21.55%
1973	N/A	3,282	119	N/A	17	14.29%
1974	24,200	3,463	177	.73%	18	10.17%
1975	25,300	3,487	197	.78%	20	10.15%
1976	26,100	4,073	195	.75%	N/A	N/A
1977	27,900	4,372	170	.61%	N/A	N/A
1978	29,000	5,731	204	.70%	24	11.76%
1979	31,300	5,289	220	.70%	27	12.27%
1980	35,300	5,403	223	.63%	30	13.45%
1981	35,400	5,846	224	.63%	N/A	N/A
1982	36,700	6,009	226	.62%	28	12.39%
1983	34,400	6,062	237	.69%	28	11.81%
1984	35,000	6,000	260	.74%	27	10.38%
1985	37,600	6,159	269	.72%	29	10.78%
1986	36,900	6,162	348	.94%	36	10.34%
1987	38,800	6,056	345	.89%	N/A	N/A
1988	38,000	6,133	332	.87%	36	10.84%
1989	36,800	5,969	359	.98%	44	12.26%
1990	37,700	5,754	375	.99%	44	11.73%
1991	38,300	5,745	388	1.01%	29	7.47%
Forecast						
1995	39,100	5,999	407	1.04%	33	8.00%
2000	39,600	6,260	424	1.07%	38	9.00%
2005	40,400	6,571	444	1.10%	44	10.00%
2010	41,200	6,907	466	1.13%	51	11.00%
2015	42,000	7,260	487	1.16%	58	12.00%

TABLE 2C
Based Aircraft Projections
Cottonwood Municipal Airport

	Existing 1991	1995	2000	2005	2010	2015
Yavapai County Registered Aircraft	388	407	424	444	466	487
Cottonwood Municipal Airport						
Historical Trend	29	43	48	53	59	64
Market-Share of County	29	33	38	44	51	58
Service Area Population	29	49	54	58	63	68
Linear Regression County Residents	29	49	55	62	70	78
Preferred Forecast	**29**	**33**	**38**	**44**	**51**	**58**
Previous Studies						
1986 Master Plan	39[1]	58	69	82	N/A	N/A
1990 SANS	39[2]	41	43	45	47	49
1988 SASP	27[3]	30	34	37	41	N/A

(1) 1985 Value
(2) 1990 Value
(3) 1988 Value

BASED AIRCRAFT FLEET MIX

The existing fleet mix of based aircraft at Cottonwood Municipal Airport was compared to existing and forecasted U.S. fleet trends and a projection was developed of the airport's future fleet mix. The overall national trend, as indicated in the **FAA's Aviation Forecasts - Fiscal Years 1991-2002**, indicates that a 0.4 percent annual increase in the active general aviation fleet is expected over the forecast period. This increase is driven primarily by a greater business use of larger business and corporate type aircraft (ie., turboprops and business jets) in the future.

Cottonwood Municipal Airport's mix of based aircraft mainly consists of single engine aircraft. It is expected that aircraft at the airport will follow the national trends and the number of single engine aircraft will drop into the low 80 percent range. Multi-engine aircraft will grow at a relatively slow rate over the planning period, whereas turbine aircraft and rotorcraft will grow at even slower rates. **Table 2D** shows the breakdown of the 1991 based aircraft fleet mix and the forecast based aircraft fleet mix for the planning period.

TABLE 2D
Based Aircraft Fleet Mix Forecast
Cottonwood Municipal Airport

		Piston Engine		Turbine Engine		
Year	Total	Single	Multi	Turboprop	Jet	Rotorcraft
1991	29	28	1	-	-	-
Forecast						
1995	33	31	2	-	-	-
2000	38	35	2	1	-	1
2005	44	38	4	1	-	1
2010	51	42	6	2	-	1
2015	58	46	7	2	1	2

GENERAL AVIATION OPERATIONS

There are two types of general aviation operations at an airport: local and itinerant. A local operation is a take-off or landing performed by an aircraft that operates in the local traffic pattern within sight of the airport, including the execution of simulated approaches and touch-and-go operations. Local operations are typically training operations. Itinerant operations are those operations performed by an aircraft with a specific origin or destination away from the airport.

Without an Air Traffic Control Tower to monitor aircraft operations, operational activity at Cottonwood Municipal Airport can only be estimated. Monitoring of aircraft activity at Cottonwood Municipal Airport was conducted as a part of this master plan using a Rens Model AAC-10 aircraft activity counter. The equipment was located near the midpoint of the runway and calibrated to be actuated during takeoff operations only.

The equipment was installed on February 6, 1992 to monitor traffic for approximately 30 days. Due to poor weather conditions and equipment failure during the month of February, the activity monitoring period was limited to February 21. The monitoring data was evaluated and found to be a poor representation of "normal" conditions. Therefore, historical operation estimates for Cottonwood Municipal Airport were obtained from the FAA Form 5010's. This information will serve as the base of historical data for the forecasting analysis.

The forecast of based aircraft was used to estimate the annual number of operations per based aircraft. Currently at Cottonwood, there are 634 annual operations per based aircraft. This ratio is considerably higher than the average general aviation airport because of the relatively high number of training

operations, many of which are completed by aircraft not based at Cottonwood Municipal Airport. However, this number of operations per based aircraft is estimated to remain constant throughout the planning period, due to an increase in business activity at the Airport. The 1991 local to itinerant operations level at Cottonwood Municipal Airport was estimated to be a 70/30 split. This split was based on local knowledge of the airport activity and estimated total operations stated on the 1991 FAA Form 5010.

It is expected that, in the future, Cottonwood Municipal Airport will be utilized more for business and industry, thereby reducing the percentage of training operations. Due to the reduction in training operations, it is projected that a 55/45 local/itinerant level will be reached by the end of the planning period. Table 2E illustrates the projected annual activity and the local/itinerant splits that can be expected throughout the planning period.

TABLE 2E
Annual General Aviation Operations Forecast
Cottonwood Municipal Airport

	Existing 1991	1995	2000	2005	2010	2015
Local Operations	13,700	14,700	16,000	17,500	19,000	20,200
Itinerant Operations	4,700	6,200	8,100	10,400	13,300	16,600
Total General Aviation Operations	18,400	20,900	24,100	27,900	32,300	36,800

AIR TAXI ACTIVITY

The air taxi category includes scheduled commuter and on demand charter service, as well as all other aircraft "...carrying passengers, mail, or cargo for compensation or hire." Continued air taxi/charter service is a strong possibility at Cottonwood Municipal Airport due to the growth in the number of businesses in the immediate area of the airport. Since there is no Air Traffic Control Tower at Cottonwood Municipal Airport, historic and current air taxi operations can only be estimated. Historical data from the FAA's Form 5010's have estimated that air taxi operations have fluctuated between 1,000 to 3,000 operations annually. Due to an increase in industrial/commercial business activity around the airport, the annual air taxi operations are forecast to double by the year 2015. The forecast of air taxi operations is illustrated in Table 2F.

TABLE 2F
Air Taxi Operations Forecast
Cottonwood Municipal Airport

	1991	1995	2000	2005	2010	2015
Air Taxi Operations	1,000	1,200	1,400	1,600	1,800	2,000

MILITARY ACTIVITY

Military operations are a very small factor at Cottonwood Municipal Airport. The Arizona Air National Guard will occasionally utilize the airport during training operations. The operation estimates from historical FAA Form 5010's, indicate 10 annual military operations. The military activity consists almost exclusively of transient helicopter training activity, therefore all of the military operations will be classified as itinerant. It is expected that the annual number of military operations will remain constant throughout the planning period. The forecast for military activity is presented in the summary table at the end of this chapter.

PEAKING CHARACTERISTICS

Many airport facility needs are effected by the levels of activity during peak periods. The periods used in developing facility requirements for this study are as follows:

- **Peak Month** - The calendar month when peak aircraft operations occur.
- **Design Day** - The average day in the peak month. Normally this indicator is easily derived by dividing the peak month operations by the number of days in the month. However, commercial activity is often heavier on weekdays than on weekends so the design day for airline activity must be adjusted to reflect the average weekday during the peak month.
- **Busy Day** - The busy day of a typical week in the peak month. This descriptor is used primarily to determine ramp space requirements.
- **Design Hour** - The peak hour within the design day. This descriptor is used particularly in airfield demand/capacity analysis, as well as in determining terminal building and access road requirements.

It is important to note that only the peak month is an absolute peak within a given year. All the others will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

COMMERCIAL SERVICE PEAKING CHARACTERISTICS

Since Cottonwood Municipal Airport does not currently have commercial service activity, the peaking estimates were derived using the same projections that were used in the general aviation section that follows.

Table 2G shows the forecast peaking characteristics for commercial service activity at Cottonwood Municipal Airport.

GENERAL AVIATION PEAKING CHARACTERISTICS

According to historical fuel records, the peak month at Cottonwood Municipal Airport typically occurs in the month of June. FAA Form 5010 operations estimates were used to project the peak month factor. For planning purposes, the peak month average of 12.0 percent is projected to remain relatively constant during the planning period.

The Design Day, also called the average day of the peak month, will vary from year to year depending on the number of operations during the peak month. For planning purposes, it was assumed that the average day of the peak month would be 0.4 percent of the annual operations.

The Busy Day operations for a general aviation airport typically will run ten to twenty percent greater than an average day. Since all other activity characteristics are consistent with the norms of general aviation airports, the busy day operations factor has been assumed to be 115 percent of design day activity. This peaking factor has been projected to remain constant throughout the planning period.

Design Hour operations are used to establish the peak hourly demand affecting airfield and terminal facilities. Currently, the Design Hour operations were estimated to be approximately 12.5 percent of the design day operations. Design Hour operations at general aviation airports generally range between 10 and 15 percent of the average day depending on the total activity. The Design Hour activity at Cottonwood Municipal Airport has been projected to remain at its current 12.5 percent level throughout the planning period.

The peaking characteristics were applied to the forecast annual operations to obtain future peak operations at Cottonwood Municipal Airport. Experience has shown that as activity begins to increase, peak periods will begin to level out. A summary of these four peaking characteristics for the planning period is presented in Table 2G.

ANNUAL INSTRUMENT APPROACHES

Forecasts of annual instrument approaches (AIA) provide guidance in determining an airport's requirements for navigation aids. An instrument approach as defined by the FAA is "an approach to an airport with intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude."

Examination of weather records obtained for the Prescott-Cottonwood area shows an occurrence of actual IFR weather conditions two percent of the time. Therefore, an estimate of the number of AIA's was obtained using the operations estimates from the FAA Form 5010 Master Records. AIA's at Cottonwood Municipal Airport would be estimated by applying a factor of 2.0 percent to the total itinerant approaches. Table 2H summarizes the forecast of AIA's for Cottonwood Municipal Airport.

Since the FAA definition of an instrument approach applies to only those instrument approaches that occur during IFR

conditions, actual instrument approaches are often higher, particularly at airports with a high percentage of training activity. With the low forecast of IFR activity, any requirement for additional navigational aids and/or instrument approach procedures would have to be based on factors other than weather, such as training capacity and overall safety.

TABLE 2G
Peaking Characteristics
Cottonwood Municipal Airport

	1995	2000	2005	2010	2015
Commercial Service Operations					
Annual	2,800	3,300	3,800	4,400	5,000
Peak Month	336	396	465	528	600
Design Day	11	13	15	18	20
Busy Day	13	15	17	20	23
Design Hour	1	2	2	2	3
Commercial Service Enplanements					
Annual	4,200	4,900	5,700	6,500	7,500
Peak Month	504	588	684	780	900
Design Day	17	20	23	26	30
Busy Day	19	23	26	30	35
Design Hour	2	2	3	3	4
Air Taxi Operations					
Annual	1,200	1,400	1,600	1,800	2,000
Peak Month	144	168	192	216	240
Design Day	5	6	6	7	8
Busy Day	6	7	7	8	9
Design Hour	-	1	1	1	1
General Aviation Operations					
Annual	20,900	24,100	27,900	32,300	36,800
Peak Month	2,500	2,900	3,300	3,900	4,400
Design Day	84	96	112	129	147
Busy Day	96	110	129	148	169
Design Hour	11	12	14	16	18

TABLE 2H
Annual Instrument Approach Forecast
Cottonwood Municipal Airport

	1995	2000	2005	2010	2015
Total Operations	24,910	28,810	33,310	38,510	43,810
Itinerant Operations	10,200	12,800	15,800	19,500	23,600
Annual Instrument Approaches					
Commuter/Air Taxi	40	47	54	62	70
General Aviation/Military	62	81	104	133	165
Total Annual Instrument Approaches	102	128	158	195	236

SUMMARY

This chapter has provided forecasts for those indicators of aviation demand that are essential to the effective analysis of future facility requirements of Cottonwood Municipal Airport. **Exhibit 2B** illustrated the forecast for total operations, enplanements, and based aircraft throughout the planning period. The next step in the master planning process is to assess the capacity of the existing facilities and to determine the size and quantities of various aviation facilities that will be necessary to meet future aviation demands.

Based upon the projections of aviation demand developed in this chapter, an analysis of existing airport capacity and a determination of future facilities will be examined in the next chapter. **Table 2I** is provided to summarize the forecast information and for easy reference in later portions of the Master Plan study.

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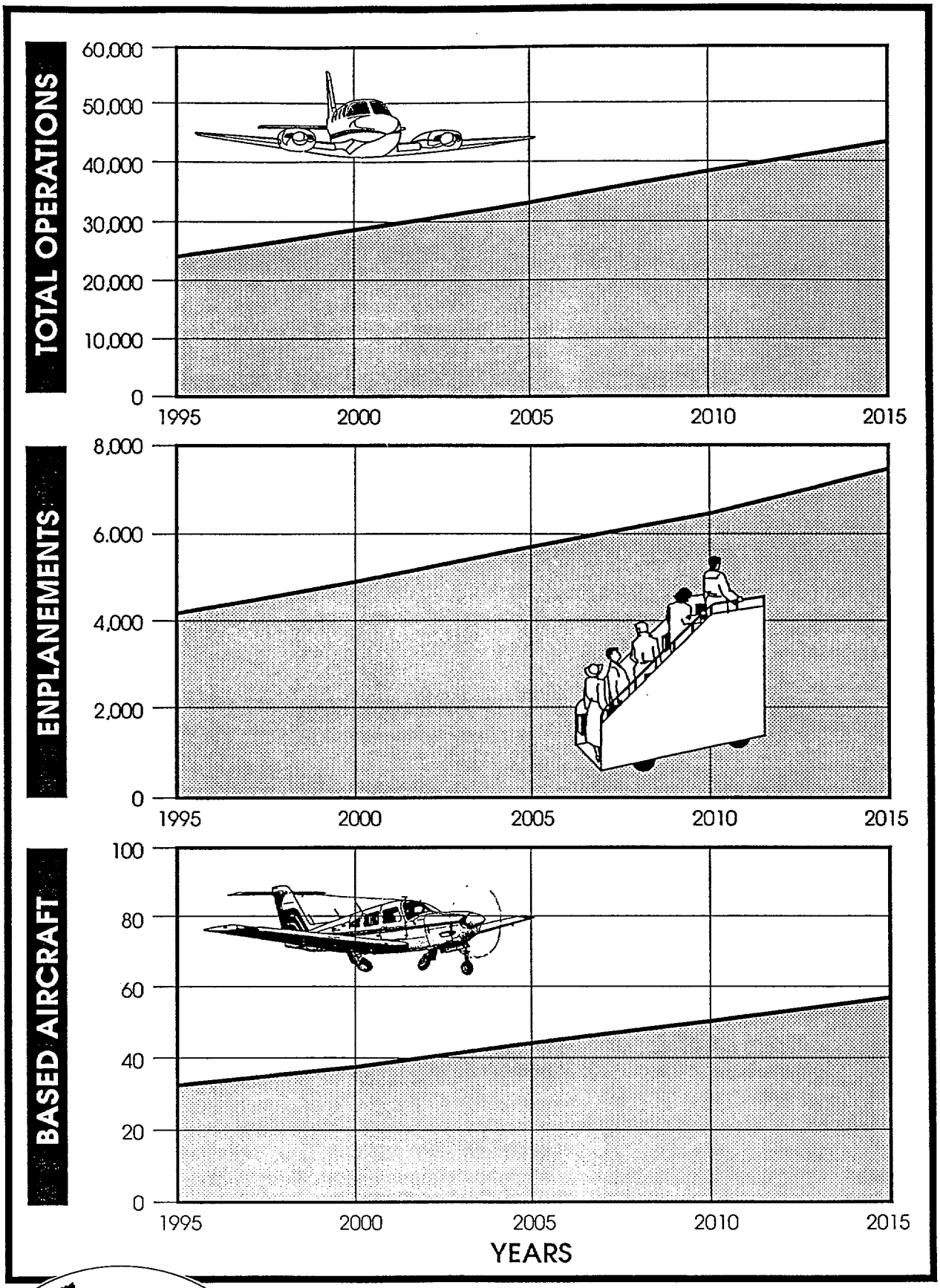

Cottonwood
ARIZONA

Exhibit 2B
AVIATION FORECAST SUMMARY

TABLE 2I
Aviation Forecast Summary
Cottonwood Municipal Airport

	Existing 1991	1995	2000	2005	2010	2015
Based Aircraft						
Single Engine	28	31	35	38	42	46
Multi Engine	1	2	2	4	6	7
Turbo Prop	-	-	1	1	2	2
Turbo Jet	-	-	-	-	-	1
Rotorcraft	-	-	-	1	1	2
Total Based Aircraft	29	33	38	44	51	58
Annual Operations	19,410	24,910	28,810	33,310	38,510	43,810
Itinerant						
- Commuter	-	2,800	3,300	3,800	4,400	5,000
- Air Taxi	1,000	1,200	1,400	1,600	1,800	2,000
- General Aviation	4,700	6,200	8,100	10,400	13,300	16,600
- Military	10	10	10	10	10	10
Local						
- General Aviation	13,700	14,700	16,000	17,500	19,000	20,200
Annual Instrument Approaches	-	102	128	158	195	236
Commuter Enplanements	-	4,200	4,900	5,700	6,500	7,500